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10/771,065	02/03/2004	Julian R. Cudmore	102.0026 US	2236

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EXAMINER	
COLLINS, GIOVANNA M	
ART UNIT	**PAPER NUMBER**
3672	

DATE MAILED: 03/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/771,065	CUDMORE ET AL.
	Examiner	Art Unit
	Giovanna M. Collins	3672

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 February 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-57* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-57* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *03 February 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *20040203*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

Applicant is advised that should claim 5 be found allowable, claim 6 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1-2,5,6,8,11,23-26,28-30,33-36 are rejected under 35 U.S.C. 102(b) as being anticipated by Garcia et al. 6,182,756.

Referring to claim 1, Garcia (fig. 1) discloses a method of optimizing a production well comprising operating a gas lift system, gathering a plurality of production related parameters, matching a well model with measured data to determine discrepancies and redesigning the gas lift system based on the discrepancies (col. 2, lines 12-26).

Referring to claims 2, 5,6,8,11, Garcia measure the gas injection rate (col. 5, lines 3-4), tubing temperature data (at 28), surface parameters measurements (at 28).

Referring to claim 23, Garcia discloses validation improvement flowing redesign of gas lift system (col. 3, lines 64-col. 4, lines 6).

Referring to claim 24-26, Garcia discloses analyzing inflow factors (gas injection rate), outflow factors (temperature at 28) and surface factors (temperature at 28).

Referring to claim 28, Garcia disclose adjusting a gas injection rate (col. 5, lines 53-55).

Referring to claim 29, Garcia discloses changing a component of the system (location of gas injection , see col. 5, lines 50-56).

Referring to claim 30, Garcia disclose correcting an inlet related limitation (gas injection rate).

Referring to claims 33 and 36, Garcia discloses optimizing a production well comprising a gas lift system (at 10), a sensor system (for measuring gas injection rate , see col. 5, lines 53-55 and temperature at element 28), and a well modeling module (col. 2, lines 12-26)).

Referring to claim 34, Garcia disclose the sensor system monitors data in real time (at 34).

Referring to claim 35, Garcia disclose a remote processor system (30).

2. Claims 1-6,8-11,13-14,17,24-26,28,30,31, 33-38, 40-41, 43-47,50-53, 55 and 57 are rejected under 35 U.S.C. 102(b) as being anticipated by WO 00/00715 to Dalsmo et al.

Referring to claim 1, Dalsmo discloses (fig. 4) a method of optimizing a production well comprising operating a gas lift system, gathering a plurality of production related parameters, matching a well model with measured data to determine discrepancies and redesigning the gas lift system based on the discrepancies (page 4, lines 9-17).

Referring to claims 2,3,5,6,8,9,11,13-14, Dalsmo discloses (see page 7) measuring the gas injection rate (lines 22-23), fluid production rate (lines 17-18), temperature data (page 7, line 15-16), surface parameters measurements (fluid production rates, lines 17-18), downhole parameters (bottom hole pressure also tubing pressure, lines 23-24), injection pressure (lines 19-20), injection temperature (lines 20-21).

Referring to claim 4, Dalsmo discloses flow gradient survey (see fig. 3).

Referring to claim 10, Dalsmo discloses getting episodic measurements (at elements 11-18, page 7, lines 14-29)

Referring to claim 17, Dalsmo discloses (see fig. 1) measuring a casing pressure (at 14) below a gas lift orifice (at 15)

Referring to claims 24-26, Dalsmo discloses analyzing inflow factors (gas injection rate at 15), outflow factors (fluid production rate at 13) and surface factors (production flow rate at 13).

Referring to claims 28 and 50, Dalsmo disclose adjusting a gas injection rate (page 3, lines 5-8).

Referring to claims 30 and 46, Dalsmo disclose correcting an inlet related limitation (gas injection rate, page 3, lines 5-8).

Referring to claims 31 and 47, Dalsmo disclose correcting an outlet related limitation (production flow rate, page 3, lines 5-8)

Referring to claims 33, Dalsmo discloses (fig. 1) optimizing a production well comprising a gas lift system, a sensor system (elements 11-18, page 7, lines 14-29), and a well modeling module (see fig. 4).

Referring to claim 34, Dalsmo disclose the sensor system (11-18) monitors data in real time.

Referring to claim 35, Dalsmo disclose a remote processor system (page 1, line 4).

Referring to claim 38, Dalsmo discloses the sensor measure injected gas (at 15).

Referring to claims 40-41, Dalsmo discloses an episodic sensor system (element 11-18) configure to obtain a flowing gradient survey (see fig. 3).

Referring to claim 43, Dalsmo discloses (fig. 1) a method of optimizing production from a gas lift system comprising flowing gas through a gas lift system (at 4), obtaining measured date from a plurality of sensors (page 7, lines 14-29), graphically plotting a gradient based on measured data (fig. 3, dotted line), graphically potting a gradient based on a model gradient (fig. 3, solid line), comparing the gradient and the mode gradient to determine whether production can be optimized (see fig. 4).

Referring to claims 44-45, Dalsmo disclose adjusting the gas lift system to optimize performance (page 4, lines 9-17).

Referring to claim 51, Dalsmo discloses changing a component (by changing the injection valve 3 or production valve 2)

Referring to claim 52, Dalsmo disclose adjusting a choke size (by adjusting the gas injection valve 3).

Referring to claim 53, Dalsmo disclose adjusting a casing pressure (at 14)

Referring to claim 55, Dalsmo discloses removing a valve restriction by adjusting the valve 2 or 3).

Referring to claim 57, Dalsmo disclose changing valve spacing inside valves 2 or 3 to increase or decrease flow.

3. Claims 1, 3, 5-9,19-22,32-35, 40 and 42 are rejected under 35 U.S.C. 102(b) as being anticipated by Jalali et al. 2002/0049575

Referring to claim 1, Jalali discloses (fig. 2) a method of optimizing a production well comprising operating a gas lift system (paragraph 0028), gathering a plurality of production related parameters (paragraph 0030), matching a well model with measured data to determine discrepancies and redesigning the gas lift system based on the discrepancies (paragraph 0030).

Referring to claims 3 and 5-8 Jalali disclose measuring fluid production rate, obtain temperature data using a distributed temperature sensing system, and measuring surface parameters measurements (paragraph 0048, last sentence)

Referring to claim 9, Jalali discloses measuring downhole parameters (paragraph 0026, last sentence).

Referring to claims 19-22, Jalali disclose selecting a candidate well by obtaining well test data (paragraph 0035), gas lift monitoring data (to determine if gas lift is appropriate on the well paragraph 0040), well history data (paragraph 0033) and completion specific data (paragraph 0034).

Referring to claim 32, Jalali disclose correcting a downhole related limitation (paragraph 0029).

Referring to claims 33, Jalali discloses optimizing a production well comprising a gas lift system (paragraph 0028), a sensor system (paragraph 0026, last sentence), and a well modeling module (see fig. 2).

Referring to claim 34, Jalali disclose the sensor system (paragraph 0064) monitors data in real time.

Referring to claim 35, Jalali disclose a remote processor system paragraph 0064).

Referring to claims 40 and 42, Jalali discloses an episodic sensor system configured to obtain distributed temperature sensing profile (paragraph 0048).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-3,5,6,8 -13,16,24-26,28,32,33-38 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vinegar et al. 6,715,550 in view of Vinegar et al. 2003/0066671.

Vinegar '550 discloses a method of optimizing a production well comprising operating a gas lift system (see fig. 2), gathering a plurality of production related parameters (col. 5, lines 3-15). Vinegar'550 does disclose using outside data to compare with measured parameters to optimize the production well (col. 5, lines 46-48) but does not disclose a well model. Vinegar '671 teaches uses data obtained from well models to affect production of a well (paragraph 0034). As it would be advantageous to optimize the production of a well it would be obvious to one of ordinary skill in the art at the time of the invention to modify the method disclosed by Vinegar '550 to use well models in view of the teachings of Vinegar' 671.

Referring to claim 2,3,5,6,8,9,11-13, and 16, Vinegar '550 teaches measuring gas injection rate and pressure (col. 5, lines 35-36), fluid production rate (col. 5, lines 34-35), tubing temperature (col. 13, lines 14-16), surface and downhole parameters (col. 5. lines 33-35), tubing pressure (col. 12, line 64 col. 13, line 1) and injection temperature (annulus temperature, col. 14, lines 65-66) and tubing pressure below a gas lift orifice (col. 17, lines 17-21).

Referring to claim 10, Vinegar '550 discloses getting episodic measurements (fluid production rate, temperate and gas injection rate and pressure (col. 5, lines 34-36)

Referring to claims 24-26, Vinegar '550 discloses analyzing inflow factors (gas injection rate and pressure col. 5, lines 35-36), outflow factors (oil output, col. 5, lines 34-35) and surface factors (oil output, col. 5, lines 35-36).

Referring to claim 28, Vinegar '550 discloses adjusting a gas injection rate (adjusting lift gas valve, at 52).

Referring to claim 30, Vinegar '550 discloses correcting an inlet related limitation (gas injection rate, page 3, lines 5-8).

Referring to claim 32, Vinegar '550 discloses correcting a downhole related limitation (gas injection rate at 52, page 3, lines 5-8)

Referring to claims 33 and 36, Vinegar '550 discloses optimizing a production well comprising a gas lift system (fig. 2), a sensor system (col. 5, lines 30-40)), Vinegar '550 does disclose using outside data to compare with measured parameters to optimize the production well (col. 5, lines 46-48) but does not disclose a well model. Vinegar '671 teaches uses data obtained from well models to affect production of a well (paragraph 0034). As it would be advantageous to optimize the production of a well it would be obvious to one of ordinary skill in the art at the time of the invention to modify the method disclosed by Vinegar '550 to have well models in view of the teachings of Vinegar' 671.

Referring to claim 34, Vinegar '550 discloses the sensor system monitors data in real time (col. 5, lines 58-60).

Referring to claim 35, Vinegar '550 discloses a remote processor system (col. 5, line 50).

Referring to claim 37, Vinegar '550 discloses a tubing pressure sensor and tubing temperature sensor (col. 12, line 64-col. 13, line15).

Referring to claim 38, Vinegar'550 discloses and injection pressure and temperature sensor (annulus pressure and temperature, col. 14, lines 65-66).

Referring to claim 40, Vinegar '550 discloses an episodic sensor system (col. 5, lines 30-40).

5. Claims 7,18, 42 and 56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dalsmo '715 in view of Smith 6,640,900.

Referring to claims 7 and 18, Dalsmo disclose not disclose a slickline deployed (fiber optic line) distributed temperature sensing system. Smith teaches a slickline deployed distributed temperature sensing system permits monitoring of conduit integrity to detect leaks (col. 7, lines 49-64). As it would be advantageous to be able to detect leaks in the production tubing, it would be obvious to one of ordinary skill in the art to modify the method disclosed by Dalsmo to have a slickline deployed distributed temperature sensing system in view of the teachings Smith.

Referring to claim 42, Dalsmo disclose the sensor system obtains a distributed temperature profile. Smith teaches having a sensing system that obtains a distributed temperature profile permits monitoring of conduit integrity to detect leaks (col. 7, lines 49-64). As it would be advantageous to be able to detect leaks in the production tubing, it would be obvious to one of ordinary skill in the art to modify the method disclosed by Dalsmo to obtain distributed temperature profile in view of the teachings of Smith.

Referring to claim 56, Dalsmo does not disclose fixing a tubing hole. However, Smith teaches a slickline deployed distributed temperature sensing system permits monitoring of conduit integrity to detect leaks (col. 7, lines 49-64), which decrease the efficiency of the gas injection. As it would be advantageous to maintain gas injection efficiency, it would be obvious to one of ordinary skill in the art to modify the method disclosed by Dalsmo to fix any tubing holes in view of the teachings of Smith.

6. Claims 15 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dalsmo '715 in view of Stokes et al. 6,454,002.

Referring to claims 15 and 39, Dalsmo disclose not disclose a multiphase flowmeter. Stoke teaches a multiphase flowmeter can be used in a gas lift system to adjust injection gas volumes to increase the production of the fluid from the well (col. 2, lines 48-68). As it would be advantageous to be able to increase the production of the fluid from the well , it would be obvious to one of ordinary skill in the art to modify the method and apparatus disclosed by Dalsmo to have a multiphase flowmeter in view of the teachings Stokes.

7. Claims 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jalali '575.

Jalali does not specifically disclose adjusting a temperature setting. However, Jalali does disclose the gas well design is dependent upon the equipment costs (paragraph 0033, lines 5-8). The temperature requirements of equipment affect the

cost. As it would be advantageous to have the most cost effective equipment, it would be obvious to one of ordinary skill in the art to modify the method disclosed by Jalali to adjust a temperature setting.

8. Claims 43-45,48, and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jalali '575 in view of Bobo 4,711,306

Jalali discloses a method of optimizing production from a gas lift system comprising flowing gas through a gas lift system (paragraph 0028), obtaining measured date from a plurality of sensors (paragraph 0026). Jalali discloses comparing measured data with model to determine whether a production can be optimized (fig. 2) but does not disclose plotting a gradient. Bobo teaches a plotting a gradient gives a visually representation of changes occurring in a well (col. 7, lines 6-10). As it would be advantageous for an operator to visually see what is happening at different areas in a well to compare measured data well models, it would be obvious to one of ordinary skill in the art at the time of the invention to modify the method disclosed by Jalali to plot a gradient of the measured data and a model in view of the teaches of Bobo.

Referring to claims 44-45, Jalali disclose adjusting the gas lift system to optimize performance (paragraph 0031).

Referring to claim 48, Jalali disclose correcting a downhole related limitation (paragraph 0029).

Referring to claim 49, Jalali does not specifically disclose adjusting a temperature setting. However, Jalali does disclose the gas well design is dependent upon the

equipment costs (paragraph 0033, lines 5-8). The temperature requirements of equipment affect the cost. As it would be advantageous to have the most cost effective equipment, it would be obvious to one of ordinary skill in the art to modify the method disclosed by Jalali to adjust a temperature setting.

9. Claims 54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dalsmo in view of Dixon et al. 4,685,522.

Dalsmo does not disclose adjusting a separator operating pressure. Dalsmo does disclose optimizing the performance of the equipment used in a gas lift system (page 4, lines 9-17). Dixon et al. teaches that a separator is used to separate the mixed production fluids to send to sales or disposal (fig. 1). Adjusting the operating pressure adjusts the separation process. As it would be advantageous to optimize the gas being sent to sales, it would be obvious to one of ordinary skill in the art at the time of the invention to modify method disclosed by Dalsmo to adjust the separator operation pressure in view of the teachings of Dixon.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Giovanna M. Collins whose telephone number is 571-272-7027. The examiner can normally be reached on 6:30-3 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David J. Bagnell can be reached on 571-272-6999. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

gmc

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